UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

H·D

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,679	09/30/2004	Chu-Chi Ting	13838-US-PA	5678

31561 7590 09/07/2006

JIANQ CHYUN INTELLECTUAL PROPERTY OFFICE
7 FLOOR-1, NO. 100
ROOSEVELT ROAD, SECTION 2
TAIPEI, 100
TAIWAN

EXAMINER	
TSIDULKO, MARK	
ART UNIT	PAPER NUMBER
2875	

DATE MAILED: 09/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/711,679	TING, CHU-CHI	
	Examiner	Art Unit	
	Mark Tsidulko	2875	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 June 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 September 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *081006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

The submission of amendment filed on 6/8/2006 is acknowledged. At this point claims 1 and 4 have been amended and the remaining claims left unchanged. Thus, claims 1-13 are at issue in the instant application.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claims 1-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Referring to Claim 1 it is unclear what are the first and second electrodes of the LEDs connected (i.e. are the first/second electrodes connected therebetween, or to another electrode).

Claims 2-13 are rejected as claims depended on claim 1.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims **1-3** and **6, 7,** as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu et al. (US 2002/0070681) in view of Isokawa et al. (US 6,084,252).

Shimizu et al. disclose (Fig.1) a white LED device including a first LED die [11] emitting blue color light, a second LED die [12] emitting red color light, a phosphor layer [13] disposed on the dies, an electrode connection structure [14] having pins [14b] and [14c] electrically connected with the electrodes [15] of the dies and a light mixing structure created by the phosphor layer [13] and an encapsulant [16]. Shimizu et al. also disclose two LED dies [11] and [12] disposed in the groove of first electrode [14a] and transparent layer [13] fills the groove.

Shimizu et al. disclose the instant claimed invention except for that first electrodes of the dies are electrically connected to the first electrode frame, and second electrodes of the dies are electrically connected to the second electrode frame.

Isokawa et al. disclose (Fig.1) that the first electrodes of the dies [3] and [5] are electrically connected to the first electrode frame [1] and the second electrodes [4] of dies are electrically connected to the second electrode frames [2] of LED. This structure allows using of two electrode frames ([1] and [2]), instead of three electrode frames ([14a], [14b] and [14c]), as shown by Shimizu et al., therefore reducing price of the semiconductor.

It would have been obvious to one having ordinary skill in the art, at the time the invention was made, to provide the device of Shimizu et al., having two electrode frames, as taught by Isokawa et al., in order to reduce the price of the semiconductor.

Claims 4, 5, 8, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu et al. and Isokawa et al., as applied to claim 1 above, and further in view of Suenaga (US 2004/0120155).

Referring to Claims **4, 5, 8** Shimizu et al. and Isokawa et al. disclose the instant claimed invention except for packaging substrate having groove and pins.

Suenaga discloses (Figs.8, 13) an LED device including a packaging substrate [5] having a groove [9], a LED [1], a transparent sealing [8] (Fig.8) that fills the groove, and pins [2] (Fig.13) connected with the electrodes [4] of the LED. The transparent sealing [8], which could be resin or glass (page 3, [0054]), includes a phosphor, capable of emitting high intensity light (page 1, [0017]), having a wavelength different from that of the light emitted from the light emitting from the light emitting element by absorbing the light emitted from the light emitting element (page 1, [0016]). Packaging layer allows obtaining the light emitting device having a good mountability and high reliability (page 1, [0012]).

It would have been obvious to one having ordinary skill in the art, at the time the invention was made, to provide the LED device of Shimizu et al. and Isokawa et al. with the packaging layer and transparent sealing, as taught by Suenaga, in order to obtain the light emitting device having a good mountability and high reliability, providing high intensity light.

Claims 9-12, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu et al. and Isokawa et al., as applied to claim 1 above, and further in view of Chang et al. (TW 546854).

Referring to Claim **9** Shimizu et al. Isokawa et al. disclose the instant claimed invention except for a combination of blue die, green die and red phosphor.

Chang et al. disclose a white light-emitting device including a blue die, a green die and a red phosphor in order to obtain realistic colorless light (see Basic-Abstract).

Referring to Claims **10-12** Shimizu et al. and Isokawa et al. disclose the instant claimed invention except for that the red phosphor covers a blue die only, green die only or both, blue and green dies.

Chang et al. disclose a white light-emitting device including a blue die, a green die and a red phosphor, but do not disclose that the phosphor covers only one of a plurality of dies.

It is known in the art, that colored light emitted from the LED is absorbed by the phosphor, but stimulates the phosphor to emit its own color light (red in this case). It is also well known in the art, that combination of blue, red and green colors creates the white light. Therefore, it is understood that any die, blue, green, or both can be covered with the phosphor for the purpose of stimulating the red phosphor to emit red light, in order to obtain the white light after mixing of three colors in order to obtain realistic colorless light (see Basic-Abstract). Using red phosphor for covering only one of two LED dies (blue or green) allows obtaining different hue of white light: greenish-white, if cover blue die, because some quantity of green light is absorbed by the phosphor, and bluish-white, if cover green die, because of absorbing some green light by the phosphor.

It would have been obvious to one having ordinary skill in the art, at the time the invention was made, to provide the red phosphor of Chang et al., covering the dies of the device

of Shimizu et al. and Isokawa et al. in any alternative combinations, in order to obtain white light for the purpose of improving color rendition.

Claim **13**, as best understood, is rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu et al., Isokawa et al. and Chang et al., as applied to claim 9 above, and further in view of Wang et al. (US 2006/0028122).

Shimizu et al., Isokawa et al. and Chang et al. disclose the instant claimed invention except for the composition of the red phosphor.

Wang et al. disclose the red phosphor selected from the group consisting of CaS:Eu.sup.2+, SrS:Eu.sup.2+ (page 3, [0034]).

It would have been obvious to one having ordinary skill in the art, at the time the invention was made, to provide the device of Shimizu et al. Isokawa et al. and Chang et al. with the red phosphor of Wang et al., in order to obtain white color illumination for the purpose of improving color rendition.

Response to Arguments

Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection.

Applicant argues, that Shimizu et al. do not disclose that the first electrode of the first LED die and the first electrode of the second LED die are electrically connected, and the second electrode of the first LED and the second electrode of the second LED die are electrically connected.

In response, as shown in 103 rejection, Isokawa et al. disclose (Fig.1) that the first electrodes of the dies [3] and [5] are electrically connected to the first electrode frame [1] and the second electrodes [4] of dies are electrically connected to the second electrode frames [2] of LED.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark Tsidulko whose telephone number is (571)272-2384. The examiner can normally be reached on 8 - 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sandra O'Shea can be reached on (571) 272-2378. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300 for all communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

M.T.
August 24, 2006

Sandra O'Shea
Supervisory Patent Examiner
Technology Center 2800